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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/808,796	03/15/2001	Karl Beeson	30-3818 DIV-2 (4370)	6658

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EXAMINER	
LUK, EMMANUEL S	
ART UNIT	PAPER NUMBER
1722	

DATE MAILED: 07/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/808,796	BEESON ET AL.	
	Examiner	Art Unit	
	Emmanuel S. Luk	1722	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 April 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *22-33,35-38,42 and 57-67* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *22-33,35-38,42 and 57-67* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. In view of the Appeal Brief filed on 4/22/05, PROSECUTION IS HEREBY REOPENED. A new ground of rejection is set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 22-33, 35-38, 42, 57-63, and 65-67 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The claims contain "an array of tapered optical waveguides positioned between the substrate and the means for directing light" which is not described in the specification. Upon review of the specification, the invention relates to the product produced by the apparatus to then be used as an optical waveguide. This can be seen in original set of claims, claim 13, where there is a further step "of combining the photopolymerized photopolymerizable material with an array of tapered optical waveguides". The photopolymerized photopolymerizable material being produced in the process of original claim 1. The original claim 34, which is dependent on original claim 22, are apparatus claims but they do not provide any nexus of how the elements are connected. In fact, as the specification discloses, the optical waveguides are part of the product that the photopolymerized photomolymerizable material is combined with and not part of the apparatus for manufacturing the light diffusing structure.

4. Claims 22-33, 35-38, 42, 57-63, and 65-67 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claims contain "an array of tapered optical waveguides **positioned between the substrate and the means for directing light**" which is not described in the specification. Upon review of the specification, the invention relates to the product produced by the apparatus to then be used as an optical waveguide. This can be seen

in original set of claims, claim 13, where there is a further step "of combining the photopolymerized photopolymerizable material with an array of tapered optical waveguides". The photopolymerized photopolymerizable material being produced in the process of original claim 1. The original claim 34, which is dependent on original claim 22, are apparatus claims but they do not provide any nexus of how the elements are connected. In fact, as the specification discloses, the optical waveguides are part of the product that the photopolymerized photomolymerizable material is combined with and not part of the apparatus for manufacturing the light diffusing structure.

5. Claims 22 and 37 have invoked means plus function pursuant to 35 U.S.C. 112, sixth paragraph. Where means plus function language is used to define the characteristics of a machine or manufacture invention, claim limitations must be interpreted to read on only the structures or materials disclosed in the specification and "equivalents thereof." (Two en banc decisions of the Federal Circuit have made clear that the Office is to interpret means plus function language according to 35 U.S.C. 112, sixth paragraph. In the first, In re Donaldson, 16 F.3d 1189, 1193, 29 USPQ2d 1845, 1848 (Fed. Cir. 1994), the court held:

The plain and unambiguous meaning of paragraph six is that one construing means-plus-function language in a claim must look to the specification and interpret that language in light of the corresponding structure, material, or acts described therein, and equivalents thereof, to the extent that the specification provides such disclosure.

Specifically, claim 22 states 'means for directing collimated or nearly-collimated light' and claim 37 states 'means for removing', 'means for forming', and 'means for applying' which invokes the means plus function pursuant to 35 U.S.C. 112, sixth paragraph.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 22-30, 35, 36, 42, and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al in view of Rendulic et al.

Takahashi teaches a transparent plate (1), such as a glass plate (col. 15, lines 27), a liquid photosensitive resin composition is placed on the substrate (Col. 15, lines 31), a transparent substrate (5) is placed, and a light source (7) is applied to cure a portion of the resin (Col. 16, lines 15-22), the uncured portion is removed via nozzle washing or brush washing using a wash-out solution (Col. 16, lines 28-31). Takahashi also teaches types of resins that can be used including oligomers, monomers, polymers (Col. 4 to Col. 14), and photoinitiators (Col. 3, line 20).

The glass plate is also the amorphous inorganic substrate that the resin rests upon.

Takahashi fails to teach a collimated light source and angle of divergence not more than 10 degrees and the light provides more than one dose and an array of optical wave guides with lenticular elements juxtaposed with polymerizable materials.

Rendulic teaches an apparatus for producing printed circuit boards wherein polymers are coated onto a board and a light is applied for curing the polymer. The light source providing collimated light (Col. 7, line 4) with an angle of deviation not more than 3 degrees and preferably not more than 1.5 degrees (Col. 7, lines 6-10). Rendulic also teaches the use of light guidance via cabinet with mirrors to change the path of the light (Col. 8, lines 26-35) and one skilled in the art would recognize the cabinet as a waveguide for directing the light.

In regards to the dose, the light can be increased to provide more than one dose, this is an intended use of light source in the apparatus.

It would have been obvious to one of ordinary skill in the art to modify Takahashi with the collimated light and angle of divergence not more than 10 degrees as taught by Rendulic because it provides uniformity and accuracy.

8. Claims 57-63 and 67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al in view of Rendulic et el.

Takahashi teaches a transparent plate (1), such as a glass plate (col. 15, lines 27), a liquid photosensitive resin composition is placed on the substrate (Col. 15, lines 31), a transparent substrate (5) is placed, and a light source (7) is applied to cure a portion of the resin (Col. 16, lines 15-22), the uncured portion is removed via nozzle

washing or brush washing using a wash-out solution (Col. 16, lines 28-31). Takahashi also teaches types of resins that can be used including oligomers, monomers, polymers (Col. 4 to Col. 14), and photoinitiators (Col. 3, line 20).

The glass plate is also the amorphous inorganic substrate that the resin rests upon.

Takahashi fails to teach a collimated light source and angle of divergence not more than 10 degrees and the light provides more than one dose and an array of optical wave guides with lenticular elements juxtaposed with polymerizable materials.

Rendulic teaches an apparatus for producing printed circuit boards wherein polymers are coated onto a board and a light is applied for curing the polymer. The light source providing collimated light (Col. 7, line 4) with an angle of deviation not more than 3 degrees and preferably not more than 1.5 degrees (Col. 7, lines 6-10). Rendulic also teaches the use of light guidance via cabinet with mirrors to change the path of the light (Col. 8, lines 26-35) and one skilled in the art would recognize the cabinet as a waveguide for directing the light.

In regards to the dose, the light can be increased to provide more than one dose, this is an intended use of light source in the apparatus.

It would have been obvious to one of ordinary skill in the art to modify Takahashi with the collimated light and angle of divergence not more than 10 degrees as taught by Rendulic because it provides uniformity and accuracy.

In regards to the smooth bumps, these are features of the product and does not further limit the claimed structure.

9. Claim 64 is rejected under 35 U.S.C. 103(a) as being unpatentable over in view of Jarsen (4415138)

Jarsen teaches a mold for creating bumps in the resin prior to curing. Jarsen also teaches applying a metal layer on material (Col. 2, lines 61-65).

Jarsen fails to teach the 1-20 μm bumps.

In regards to the shape of surface being smooth bumps between 1-20 μm, Jarsen teaches the shape to be formed as bumps having a depth of 0.7 μm and 2 μm in radial direction.

It would have been obvious to one of ordinary skill in the art to modify Jarsen to merely change the size of the depth thus allowing for the desire bump size in the surface of the product.

10. Claims 22-30, 35, 36, 42, 65, and 66 rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumura et al in view of Rendulic et al.

Matusumura et al teaches a glass substrate (1), a transparent electroconductive layer (2), containing tin oxide, indium oxide and the like (Col. 2, lines 7-9), a photosensitive layer (3), a mask (4), the resin comprising of polymer resins, exposure of a light source for curing (Col. 4, lines 38-40) and the substrate is washed rinsed in water to remove the resin (Col. 4, lines 50-53).

Matsumura fails to teach a collimated light source and angle of divergence not more than 10 degrees and the light provides more than one dose and an array of optical wave guides with lenticular elements juxtaposed with polymerizable materials.

Rendulic teaches an apparatus for producing printed circuit boards wherein polymers are coated onto a board and a light is applied for curing the polymer. The light source providing collimated light (Col. 7, line 4) with an angle of deviation not more than 3 degrees and preferably not more than 1.5 degrees (Col. 7, lines 6-10). Rendulic also teaches the use of light guidance via cabinet with mirrors to change the path of the light (Col. 8, lines 26-35) and one skilled in the art would recognize the cabinet as a waveguide for directing the light.

In regards to the dose, the light can be increased to provide more than one dose, this is an intended use of light source in the apparatus.

It would have been obvious to one of ordinary skill in the art to modify Matsumura with the collimated light and angle of divergence not more than 10 degrees as taught by Rendulic because it provides uniformity and accuracy.

11. Claims 31-33, 37-41 and 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumura in view of Rendulic as applied to claims 22-30, 35, 36 and 42 above, and further in view of Jarsen (4415138).

Matsumura teaches the claimed apparatus as shown above.

Matsumura fails to teach a metallic layer for embossing, light scattering particles in the embossable material and an array of optical wave guides with lenticular elements juxtaposed with polymerizable materials.

Jarsen teaches a mold for creating bumps in the resin prior to curing. In regards to the shape of surface being smooth bumps between 1-20 μm, Jarsen teaches the shape to be formed as bumps having a depth of 0.7 μm and 2 μm in radial direction. It would have been obvious to one of ordinary skill in the art to modify Jarsen to merely change the size of the depth thus allowing for the desire bump size in the surface of the product.

It would have been obvious to one of ordinary skill in the art to modify Takahashi with a surface as taught by Jarsen because it allows for the desired shape and depth on the surface of the resin layer.

Response to Arguments

12. Applicant's arguments with respect to claims 22-33, 35-38, 42, and 57-67 have been considered but are moot in view of the new ground(s) of rejection. The new office action includes rejection of the claims concerning the claimed array of tapered optical waveguides that do not share a nexus with the claimed apparatus. Examiner cannot discern how the waveguides are related to the claimed apparatus other than as part of the product and that occurs in an intermediate process step in the construction. The waveguides are NOT part of apparatus and are NOT described in the specification nor in the original claims as the waveguides are now claimed, which is part of a later

amendment. The new rejections now reflect that the optical waveguides are NOT part of the apparatus.

In regards to claim 64, the claim merely claims a metallic layer and the photomopolymerized portion having a surface with bumps. The new rejection of claim 64 in view of Jarsen shows this change. The specific photopolymerizable material is merely an intended use of the mold apparatus.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel S. Luk whose telephone number is (571) 272-1134. The examiner can normally be reached on Monday-Thursday 8 to 5 and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Davis can be reached on (571) 272-1129. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EL

ROBERT DAVIS
PRIMARY EXAMINER
GROUP ~~1300~~ 1722

7/25/05